



# UNITED STATES PATENT AND TRADEMARK OFFICE

*cen*

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/637,199	08/08/2003	Rongchung Tyan	LMP128US	4100
23623 7590 03/05/2007 AMIN, TUROCY & CALVIN, LLP 1900 EAST 9TH STREET, NATIONAL CITY CENTER 24TH FLOOR, CLEVELAND, OH 44114			EXAMINER LEPISTO, RYAN A	
			ART UNIT 2883	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE 3 MONTHS		MAIL DATE 03/05/2007	DELIVERY MODE PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/637,199	<b>Applicant(s)</b> TYAN ET AL.	
	<b>Examiner</b> Ryan Lepisto	<b>Art Unit</b> 2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 05 February 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-41 and 53-63 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-41 and 53-63 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                 | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**Claims 1-8, 10-14, 16-17, 19-21, 33-40, 53-60 and 63 are rejected under 35**

**U.S.C. 102(b) as being anticipated by Yamashita et al (US 2001/0053265 A1)**

**(Yamashita).** Yamashita teaches a bi-directional PLC transceiver (Figs. 1, 9, paragraphs 0035-0037, 0039, 0042, 0045) for separating optical signals at a first narrow wavelength range from the rest of the signals different wavelength range (paragraph 0042) comprising a PLC (10, 310) having an folded path internal waveguide structure (16, 314) having an input end (16a) and output side (16b, 16c) adapted to direct signals at least close to a normal incidence angle to a filter (30) from a single input signal laser diode source (40, LD applied to the PLC 310) and optical fiber (40) in a V-groove (paragraph 0035), a silicon substrate (20, 320) (silicon having an intrinsic wavelength selection absorption property that pass and reflects certain wavelengths) a wavelength selective interference filter mirror means (30) positioned external to the PLC (10, 310) on a side proximal the input end (16a) and the output ends (16b, 16c) and at an output

Art Unit: 2883

port (16b) of an output waveguide by deposition and in energy coupled proximity to an external surface of the PLC (10, 310) configured to pass a band of signals centered at the first wavelength range and reflect a band other than the first wavelength range (the second wavelength range, paragraph 0042), a signal detector (PD1, PD2) placed in energy-coupled proximity to the filter (30) wherein the reflected external signal from the filter (30) is received by second output (16b) of the waveguides and both ends of both waveguides communicate with the source (40, LD) since both transmit a signal from the source.

**Claims 1-4, 6, 9, 11, 13-14, 20, 33-39, 41 and 53-60** are rejected under 35 U.S.C. 102(e) as being anticipated by **Kimura (US 6,760,510 B2)**. Kimura teaches a PLC transceiver (Fig. 5, column 10 lines 1-60) for separating optical signals at first ( $\lambda_1$ ) and second ( $\lambda_2$ ) different wavelengths from a single input signal laser diode source (81) comprising a PLC (72) having an internal bi-directional branching waveguide structure (74 with 84 with 83 with 85) having an input end (78) adapted to direct a first wavelength ( $\lambda_1$ ) signal to a detector (88) at the first output end (right side) that detects a wavelength with high extinction wavelength isolation from the other wavelength, first (74) and second (79) output ends with the second (79) receiving signals from an external source (73) at the second end (right side), a wavelength selective filter mirror means (86) positioned by deposition external to the PLC (72) in a proximal relationship with the output end and proximal the branching waveguide input port (74) and placed in energy coupled proximity to an external surface of the PLC (72) configured to pass a band of

Art Unit: 2883

signals centered at a first wavelength and reflect a band of signals centered at a second wavelength (column 10 lines 53-60), a signal detector (88) placed in energy coupled proximity to the filter (86)

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claim 15** is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita as applied to claims 1-8, 10-14, 16-17, 19-21, 33-40, 53-60 and 63 above, and further in view of **Kuhara et al (US 2003/0210866 A1)** (Kuhara).

Yamashita teaches the device described above.

Yamashita does not teach expressly using an LED as the source.

Kuhara teaches a transceiver that emits a 1.31  $\mu\text{m}$  wavelength that can be from either a laser diode or LED (paragraph 0059).

Yamashita and Kuhara are analogous art because they are from the same field of endeavor, transceivers with branched waveguides, detectors and sources.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the teaching of Kuhara that either a laser diode or LED can transmit the wavelength specified by Yamashita.

The motivation for doing so would have been to reduce cost by being able to specify the least expensive of either a laser diode or LED for the device.

**Claim 18** is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita as applied to claims 1-8, 10-14, 16-17, 19-21, 33-40, 53-60 and 63 above, and further in view of **Fouquet (US 6,195,478 B1)**.

Yamashita teaches the device described above.

Yamashita does not teach expressly the waveguides being tapered.

Fouquet teaches a PLC having internal waveguides that couple between filters and optical fibers wherein the internal waveguides are tapered (column 9 lines 24-32).

Yamashita and Fouquet are analogous art because they are from the same field of endeavor, transceivers with branched waveguides and sources transmitting to filters.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the teaching of Fouquet that internal PLC waveguides can be tapered in the device taught by Yamashita.

The motivation for doing so would have been to increase coupling efficiency by having a wide end at the filter for good coupling and a narrower end at the fibers to direct the signal to the fiber without much loss (Fouquet, column 9 lines 28-32).

**Claims 22, 24-27 and 29-32** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita as applied to claims 1-8, 10-14, 16-17, 19-21, 33-40, 53-60 and 63 above, and further in view of **Rolston et al (US 2005/0018993)** (Rolston).

Yamashita teaches the device described above.

Yamashita does not expressly state that the V-groove substrate is cut at a forty-five degree angle making an input ferrule structure made of a material that is near infrared transparent.

Rolston teaches an optical ferrule (Figs. 5A, 6A, 7A, 8A) comprising a V-groove cut substrate (20) made of silicon (paragraph 0059) which is a material that is near infrared transparent (see Nakanishi et al (US 2003/0123819 A1) paragraph 0022) that holds optical fibers (6) with an optically transparent adhesive (18) wherein the substrate has a polished end face cut at a forty-five degree angle (paragraph 0055) for coupling lasers to detectors arrays (paragraphs 0053, 0090).

Yamashita and Rolston are analogous art because they are from the same field of endeavor, coupling sources to detectors via silicon substrates.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the ferrule structure as taught by Rolston with the forty-five degree cut to reduce back reflections that is widely known and used in the art for the input structure in Yamashita.

The motivation for doing so would have to reduce back reflections into the fibers by cutting the fibers and substrate at a forty-five degree angle.

**Claims 23-24 and 28** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita in view of Rolston as applied to claims 1-8, 10-14, 16-17, 19-21, 33-40,

Art Unit: 2883

53-60 and 63 above, and further in view of **Di Domenico, Jr. et al (4,165,496)** (Di Domenico).

Yamashita in view of Rolston teaches the device described above.

Yamashita in view of Rolston does not expressly state the cover of the substrate is glass or that a photo-detector is located on the surface of the ferrule.

Di Domenico teaches (Fig. 6) a V-groove substrate (40) holding a fiber (42) with a glass cover plate (44) and adhesive holding the fiber down with a photo-detector (45) adhered to the cover plate (44) (column 5 lines 31-58).

Yamashita in view of Rolston and Di Domenico are analogous art because they are from the same field of endeavor coupling sources to detectors via V-groove substrates.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the teaching of Di Domenico in the structure taught by Yamashita in view of Rolston since they are both coupling a source to a detector via a fiber held in a V-groove substrate.

The motivation for doing so would have to increase coupling efficiency by using a configuration that minimizes fiber movement relative to the source and is suitable for use in an optical communications system (Di Domenico, column 2 lines 58-60).

**Claim 61** is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita as applied to claims 1-8, 10-14, 16-17, 19-21, 33-40, 53-60 and 63 above, and further in view of **Scobey (US 5,583,683)**.



Art Unit: 2883

Yamashita teaches the device described above.

Yamashita does not expressly state that the filter is variable thickness.

Scobey teaches a transceiver using a planar block waveguide with a filter (74) disposed on an end of the block wherein the filter is a variable thickness interference filter that allows one wavelength band through and reflects others (column 6 lines 1-16).

Yamashita and Scobey are analogous art because they are from the same field of endeavor, transceivers with sources and filters for multiplexing.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the teaching of Scobey that filters that transmit one wavelength and reflect others is often called an interference filter and that they are known in the art to often be variable thickness.

The motivation for doing so would have to increase efficiency and temperature characteristics by using a filter that demonstrates excellent thermal stability and narrow bandwidths (Scobey, column 6 lines 4-6).

**Claim 62** is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita as applied to claims 1-8, 10-14, 16-17, 19-21, 33-40, 53-60 and 63 above, and further in view of **Grasis et al (US 6,198,857 B1)** (Grasis).

Yamashita teaches the device described above.

Yamashita does not expressly state that the filter is a dichroic filter.

Art Unit: 2883

Grasis teaches a transceiver using a planar block waveguide with a filter (60) disposed on an end of the block wherein the filter can be a dichroic filter (column 11 lines 11-15).

Yamashita and Grasis are analogous art because they are from the same field of endeavor, transceivers with sources and filters for multiplexing.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the teaching of Grasis that dichroic filters can be used in multiplexing structure like the one taught by Yamashita.

The motivation for doing so would have to increase efficiency by using a filter with improved filter performance to provide better multiplexing (Grasis, column 11 lines 13-15).

### ***Response to Arguments***

Applicant's arguments with respect to rejected claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 2883

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan Lepisto whose telephone number is (571) 272-1946. The examiner can normally be reached on M-Th 7:30 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2883

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Ryan Lepisto  
Art Unit 2883



Frank Font  
Supervisory Patent Examiner  
Technology Center 2800